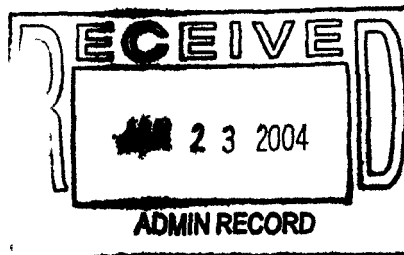


NOTICE

All drawings located at the end of the document.

**Buffer Zone
Sampling and Analysis Plan
FY04 Addendum #BZ-04-11
IHSS Group 900-11, PAC SE-1602
(East Firing Range)**

January 2004



BZ-A-000635

**Buffer Zone
Sampling and Analysis Plan
FY04 Addendum #BZ-04-11
IHSS Group 900-11, PAC SE-1602
(East Firing Range)**

Approval received from the U S Environmental Protection Agency, Region VIII

January 14, 2004

Approval letter contained in the Administrative Record

January 2004

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ACRONYMS AND ABBREVIATIONS

AL	action level
BZ	Buffer Zone
BZSAP	Buffer Zone Sampling and Analysis Plan
DOE	U S Department of Energy
ER	Environmental Restoration
FY	Fiscal Year
HRR	Historical Release Report
IHSS	Individual Hazardous Substance Site
mg/kg	milligram per kilogram
PAC	Potential Area of Concern
pCi/g	picocuries per gram
PCOC	potential contaminant of concern
RFCA	Rocky Flats Cleanup Agreement
SAP	Sampling and Analysis Plan
UBC	Under Building Contamination
WRW	wildlife refuge worker
XRF	x-ray fluorescence

1.0 INTRODUCTION

This Buffer Zone (BZ) Sampling and Analysis Plan (SAP) (BZSAP) Addendum #BZ-04-11 includes Individual Hazardous Substance Site (IHSS) Group-specific information, sampling locations, and potential contaminants of concern (PCOCs) for IHSSs and Potential Areas of Concern (PACs) proposed for characterization during Fiscal Year (FY) 04. This BZSAP Addendum is a supplement to the BZSAP (DOE 2002) and includes data and proposed sampling locations for PAC SE-1602, which is part of IHSS Group 900-11. IHSS Group 900-11 also contains IHSS 112 (903 Pad), IHSS 140 (Hazardous Disposal Area), and IHSS 155 (903 Lip Area), however, these IHSSs are not addressed in this Addendum. The location of PAC SE-1602 (East Firing Range) is shown on Figure 1.

2.0 EXISTING CHARACTERIZATION INFORMATION

PAC SE-1602 consists of a pistol range, northern targets, and southern targets, as shown on Figure 2. The pistol range consists of an asphalt-paved parking area, a small arms firing range with a berm, and the remnants of at least three machine-gun mounts. The mounts were used to fire at downhill targets. The northern targets currently consist of two rows. One row is located 50 yards from the pistol range and is approximately 185 feet long. The other row is located 100 yards from the pistol range and is approximately 100 feet long. The southern targets consist of one row approximately 75 feet long.

Infrastructure within the pistol range will be removed as an Environmental Restoration (ER) action in accordance with an ER Rocky Flats Cleanup Agreement (RFCA) Decision Document. The Decision Document will also include any soil removals based on the implementation of this BZSAP Addendum or further characterization efforts.

Existing information and data for the PAC and surrounding area are available in Appendix C of the BZSAP (DOE 2002) and the Historical Release Reports (HRRs) for the Rocky Flats Plant (DOE 1992-2003). PCOCs for PAC SE-1602 are presented in Table 1. Contaminant concentrations in soil greater than background means plus two standard deviations are presented on Figure 2. The figure shows that most contaminant concentrations are below RFCA action levels (ALs) (DOE et al. 2003). However, two sampling locations, between the northern and southern targets, contained plutonium-239/240 activities in surface soil above the wildlife refuge worker (WRW) AL. This contamination will be evaluated in the 903 Lip Area Interim Measure/Interim Remedial Action decision document and removed if necessary. One sampling location, south of the southern target, contained a lead concentration in surface soil above the ecological receptor AL. This exceedance will be addressed in the closeout or data summary report for PAC SE-1602.

Table 1
PCOCs for PAC SE-1602

IHSS Group	IHSS/PAC/UBC Site	PCOCs	Media	Data Source	Sampling Method
900-11	PAC SE-1602	Metals Uranium	Surface and subsurface soil	HRRs (DOE 1992-2003), process knowledge, and existing sample data	Biased

3.0 SAMPLING

Bullets fired from the pistol range toward the northern and southern targets penetrated the individual targets and impinged into the upward-sloping hillside south of Woman Creek. Based on bullet trajectories and topography, the greatest number of bullets shot at the northern targets most likely impinged just in front of the southern targets, and the greatest number of bullets shot at the southern targets most likely impinged just behind the southern targets. Figure 3 shows the most probable bullet trajectories and the related impact zone (a little less than 1,000 feet wide). Trajectories from shooting at both the northern and southern targets cover a zone (approximately 100 feet wide) that probably contains some of the highest numbers of bullet impingements, and therefore, probably contains some of the highest concentrations of metals, including lead and possibly depleted uranium.

Bullets were also shot at the base of the northern targets (just in front of the first target row). According to Site security personnel, shooters generally started shooting at the base of the individual targets and then moved their trajectories up into the targets. This initial shooting created a visible depression in the ground. This ground depression and the area behind it could also contain some of the highest numbers of impingements, and therefore, some of the highest metal concentrations.

This BZSAP Addendum proposes to evaluate the areas most impacted by the East Firing Range operations. The sampling objective is to determine whether metal contamination is present in the areas most impacted, not to fully characterize the PAC. Sampling will occur in areas where the highest metal concentrations are expected. Results will be used to determine whether detected concentrations are of concern, define further characterization needs, and/or make remediation decisions. If metal concentrations in the most impacted areas are low, it is assumed that metal concentrations in other areas impacted by the East Firing Range would also be low or undetectable.

Most samples will be collected from the zone impacted by shooting at both the northern and southern targets (associated with the red trajectories shown on Figure 3). Twenty-five sampling locations are proposed within this zone, based on five trajectories spaced approximately 25 feet apart at the southern boundary of the PAC and five locations per trajectory. The five locations along each trajectory are situated on five 5-foot contour lines (Figure 4). Fewer samples will be collected from both sides of this zone.

Locations for these samples are based on 10 trajectories, spaced approximately 75 feet apart, and three locations per trajectory (i.e., on the three contours) (Figure 4). Sampling on the contours within the impact zone will allow a vertical evaluation of bullet distribution and metal concentrations.

Fifteen sampling locations are also proposed around the first row of the northern targets, in an area 15 feet wide and 20 feet long (Figure 5). The area covers 10 feet in front of the first row of targets (where the bullet depression is) and ten feet behind the first row.

Two samples will be collected from each sampling location, from 0 to 0.5 foot and 0.5 to 2.5 feet. Hand tools, such as Shelby tubes, will be used to minimize impacts to the Preble's meadow jumping mouse habitat. Each sample will be analyzed using a field x-ray fluorescence (XRF) instrument. Prior to analysis, each sample will be sieved to obtain a homogeneous sample and remove bullets, fragments, and other debris. The type and volume of debris removed will be recorded by sampling location and depth interval. Debris may also be analyzed for waste management purposes. All sampling locations will be surveyed and flagged. To minimize the impact to the Preble's meadow jumping mice, sampling may be conducted during their hibernation season (October 1 to May 15).

Background samples will also be collected. Four background sampling locations will be selected south of the East Firing Range along and upgradient of the dirt road (Figure 6). Two samples will be collected from each location, at 0 to 0.5 foot and 0.5 to 2.5 feet.

XRF (Method 6200) results will be verified using Laboratory Method 6010. Soil samples will be collected from 16 locations within the three impact zones and where background samples were collected, adjacent to the locations sampled and analyzed using Method 6200, as summarized below in Table 2. Five samples will be collected from the intervals with the highest concentrations, six samples will be collected from the intervals with concentrations closest to the AL, and five samples will be collected from the intervals with the lowest concentrations (measured using Method 6200). These 16 additional samples that will be analyzed using Method 6010 represent more than 10% of the original samples that will be analyzed using Method 6200 (16 Method 6010 analyses divided by 148 Method 6200 analyses equals 10.8%).

The proposed sampling and analysis specifications for PAC SE-1602 are summarized in Table 3, and listed by sampling location in Table 4. The proposed sampling locations are the starting point for characterization of PAC SE-1602. They will be field-located using survey equipment to accurately establish trajectories and walkdowns to find the areas most impacted by bullet fire. The locations will be adjusted through the consultative process. After characterization starts, the number of samples and sampling locations may change based on field conditions and sample results. If contaminant concentrations are found to be high, additional samples may be collected in consultation with the regulatory agencies, and a contact record will be issued.

Table 2
Approximate Number of Soil Samples to be Collected and Analyzed Using
Laboratory Method 6010 Based on XRF Sampling Locations and Results

XRF Sampling Area	XRF Concentration			Total Number of Samples
	Highest	Closet to AL	Lowest	
Northern Target Area	1	1	1	3
Southern Target Area impacted from shooting at both the northern and southern targets	3	3	3	9
Southern Target Area impacted from shooting at the northern targets	1	1	1	3
Background	0	1	0	1
Total Number of Samples	5	6	5	16

Table 3
PAC SE-1602 Sampling and Analysis Summary

Category	Total
Number of Sampling Locations	74
Number of Samples	164
Number of Metal Analyses (Method 6200)	148
Number of Metal Analyses (Method 6010)	16

Table 4
Sampling Specifications for PAC SE-1602

Location	Easting	Northing	Media	Depth Interval (feet.)	Analyte	On-Site Field Method
Locations Around the Southern Targets						
CV31-002	2087029 440	747702 272	Surface soil	0 0-0 5	Metals	6200
CV31-002	2087029 440	747702 272	Subsurface soil	0 5-2 5	Metals	6200
CV31-003	2087114 943	747711 821	Surface soil	0 0-0 5	Metals	6200
CV31-003	2087114 943	747711 821	Subsurface soil	0 5-2 5	Metals	6200
CV32-002	2087032 478	747849 407	Surface soil	0 0-0 5	Metals	6200
CV32-002	2087032 478	747849 407	Subsurface soil	0 5-2 5	Metals	6200
CV32-003	2087031 176	747779 529	Surface soil	0 0-0 5	Metals	6200
CV32-003	2087031 176	747779 529	Subsurface soil	0 5-2 5	Metals	6200
CV32-004	2087107 131	747848 539	Surface soil	0 0-0 5	Metals	6200
CV32-004	2087107 131	747848 539	Subsurface soil	0 5-2 5	Metals	6200
CV32-005	2087111 905	747764 772	Surface soil	0 0-0 5	Metals	6200
CV32-005	2087111 905	747764 772	Subsurface soil	0 5-2 5	Metals	6200
CW31-007	2087200 013	747720 935	Surface soil	0 0-0 5	Metals	6200
CW31-007	2087200 013	747720 935	Subsurface soil	0 5-2 5	Metals	6200
CW31-008	2087292 027	747712 689	Surface soil	0 0-0 5	Metals	6200
CW31-008	2087292 027	747712 689	Subsurface soil	0 5-2 5	Metals	6200
CW32-002	2087182 218	747849 407	Surface soil	0 0-0 5	Metals	6200
CW32-002	2087182 218	747849 407	Subsurface soil	0 5-2 5	Metals	6200
CW32-003	2087191 332	747783 001	Surface soil	0 0-0 5	Metals	6200
CW32-003	2087191 332	747783 001	Subsurface soil	0 5-2 5	Metals	6200
CW32-004	2087266 419	747821 630	Surface soil	0 0-0 5	Metals	6200
CW32-004	2087266 419	747821 630	Subsurface soil	0 5-2 5	Metals	6200
CW32-005	2087280 308	747763 036	Surface soil	0 0-0 5	Metals	6200
CW32-005	2087280 308	747763 036	Subsurface soil	0 5-2 5	Metals	6200
CX31-031	2087354 527	747741 334	Surface soil	0 0-0 5	Metals	6200

Location	Easting	Northing	Media	Depth Interval (feet.)	Analyte	On-Site Field Method
CX31-031	2087354 527	747741 334	Subsurface soil	0 5-2 5	Metals	6200
CX31-032	2087363 207	747712 689	Surface soil	0 0-0 5	Metals	6200
CX31-032	2087363 207	747712 689	Subsurface soil	0 5-2 5	Metals	6200
CX31-033	2087373 624	747676 230	Surface soil	0 0-0 5	Metals	6200
CX31-033	2087373 624	747676 230	Subsurface soil	0 5-2 5	Metals	6200
CX31-035	2087385 343	747638 036	Surface soil	0 0-0 5	Metals	6200
CX31-035	2087385 343	747638 036	Subsurface soil	0 5-2 5	Metals	6200
CX31-036	2087371 454	747761 300	Surface soil	0 0-0 5	Metals	6200
CX31-036	2087371 454	747761 300	Subsurface soil	0 5-2 5	Metals	6200
CX31-037	2087379 700	747736 994	Surface soil	0 0-0 5	Metals	6200
CX31-037	2087379 700	747736 994	Subsurface soil	0 5-2 5	Metals	6200
CX31-038	2087387 947	747710 518	Surface soil	0 0-0 5	Metals	6200
CX31-038	2087387 947	747710 518	Subsurface soil	0 5-2 5	Metals	6200
CX31-039	2087398 797	747676 230	Surface soil	0 0-0 5	Metals	6200
CX31-039	2087398 797	747676 230	Subsurface soil	0 5-2 5	Metals	6200
CX31-040	2087411 384	747639 772	Surface soil	0 0-0 5	Metals	6200
CX31-040	2087411 384	747639 772	Subsurface soil	0 5-2 5	Metals	6200
CX31-041	2087396 193	747756 525	Surface soil	0 0-0 5	Metals	6200
CX31-041	2087396 193	747756 525	Subsurface soil	0 5-2 5	Metals	6200
CX31-042	2087403 138	747734 824	Surface soil	0 0-0 5	Metals	6200
CX31-042	2087403 138	747734 824	Subsurface soil	0 5-2 5	Metals	6200
CX31-043	2087412 252	747710 953	Surface soil	0 0-0 5	Metals	6200
CX31-043	2087412 252	747710 953	Subsurface soil	0 5-2 5	Metals	6200
CX31-044	2087422 669	747678 400	Surface soil	0 0-0 5	Metals	6200
CX31-044	2087422 669	747678 400	Subsurface soil	0 5-2 5	Metals	6200
CX31-045	2087435 690	747641 508	Surface soil	0 0-0 5	Metals	6200
CX31-045	2087435 690	747641 508	Subsurface soil	0 5-2 5	Metals	6200
CX31-046	2087419 197	747754 789	Surface soil	0 0-0 5	Metals	6200

Location	Easting	Northing	Media	Depth Interval (feet.)	Analyte	On-Site Field Method
CX31-046	2087419 197	747754 789	Subsurface soil	0 5-2 5	Metals	6200
CX31-047	2087427 009	747733 956	Surface soil	0 0-0 5	Metals	6200
CX31-047	2087427 009	747733 956	Subsurface soil	0 5-2 5	Metals	6200
CX31-048	2087434 822	747711 821	Surface soil	0 0-0 5	Metals	6200
CX31-048	2087434 822	747711 821	Subsurface soil	0 5-2 5	Metals	6200
CX31-049	2087446 107	747681 439	Surface soil	0 0-0 5	Metals	6200
CX31-049	2087446 107	747681 439	Subsurface soil	0 5-2 5	Metals	6200
CX31-050	2087460 429	747642 810	Surface soil	0 0-0 5	Metals	6200
CX31-050	2087460 429	747642 810	Subsurface soil	0 5-2 5	Metals	6200
CX31-051	2087442 634	747752 619	Surface soil	0 0-0 5	Metals	6200
CX31-051	2087442 634	747752 619	Subsurface soil	0 5-2 5	Metals	6200
CX31-052	2087450 013	747733 088	Surface soil	0 0-0 5	Metals	6200
CX31-052	2087450 013	747733 088	Subsurface soil	0 5-2 5	Metals	6200
CX31-053	2087459 127	747710 518	Surface soil	0 0-0 5	Metals	6200
CX31-053	2087459 127	747710 518	Subsurface soil	0 5-2 5	Metals	6200
CX31-054	2087471 280	747679 268	Surface soil	0 0-0 5	Metals	6200
CX31-054	2087471 280	747679 268	Subsurface soil	0 5-2 5	Metals	6200
CX31-055	2087486 037	747641 074	Surface soil	0 0-0 5	Metals	6200
CX31-055	2087486 037	747641 074	Subsurface soil	0 5-2 5	Metals	6200
CX31-056	2087516 853	747740 466	Surface soil	0 0-0 5	Metals	6200
CX31-056	2087516 853	747740 466	Subsurface soil	0 5-2 5	Metals	6200
CX31-057	2087530 308	747712 689	Surface soil	0 0-0 5	Metals	6200
CX31-057	2087530 308	747712 689	Subsurface soil	0 5-2 5	Metals	6200
CX32-000	2087345 846	747769 546	Surface soil	0 0-0 5	Metals	6200
CX32-000	2087345 846	747769 546	Subsurface soil	0 5-2 5	Metals	6200
CY31-008	2087542 461	747685 779	Surface soil	0 0-0 5	Metals	6200
CY31-008	2087542 461	747685 779	Subsurface soil	0 5-2 5	Metals	6200
CY31-009	2087592 374	747726 578	Surface soil	0 0-0 5	Metals	6200

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Location	Easting	Northing	Media	Depth Interval (feet.)	Analyte	On-Site Field Method
CY31-009	2087592 374	747726 578	Subsurface soil	0 5-2 5	Metals	6200
CY31-010	2087607 565	747699 234	Surface soil	0 0-0 5	Metals	6200
CY31-010	2087607 565	747699 234	Subsurface soil	0 5-2 5	Metals	6200
CY31-011	2087625 360	747665 814	Surface soil	0 0-0 5	Metals	6200
CY31-011	2087625 360	747665 814	Subsurface soil	0 5-2 5	Metals	6200
CY31-012	2087678 311	747699 668	Surface soil	0 0-0 5	Metals	6200
CY31-012	2087678 311	747699 668	Subsurface soil	0 5-2 5	Metals	6200
CY31-013	2087690 464	747679 268	Surface soil	0 0-0 5	Metals	6200
CY31-013	2087690 464	747679 268	Subsurface soil	0 5-2 5	Metals	6200
CY31-014	2087701 749	747660 171	Surface soil	0 0-0 5	Metals	6200
CY31-014	2087701 749	747660 171	Subsurface soil	0 5-2 5	Metals	6200
CZ31-004	2087749 492	747710 518	Surface soil	0 0-0 5	Metals	6200
CZ31-004	2087749 492	747710 518	Subsurface soil	0 5-2 5	Metals	6200
CZ31-005	2087763 815	747689 685	Surface soil	0 0-0 5	Metals	6200
CZ31-005	2087763 815	747689 685	Subsurface soil	0 5-2 5	Metals	6200
CZ31-006	2087780 742	747664 512	Surface soil	0 0-0 5	Metals	6200
CZ31-006	2087780 742	747664 512	Subsurface soil	0 5-2 5	Metals	6200
CZ31-007	2087825 881	747720 935	Surface soil	0 0-0 5	Metals	6200
CZ31-007	2087825 881	747720 935	Subsurface soil	0 5-2 5	Metals	6200
CZ31-008	2087843 676	747696 630	Surface soil	0 0-0 5	Metals	6200
CZ31-008	2087843 676	747696 630	Subsurface soil	0 5-2 5	Metals	6200
CZ31-009	2087899 232	747623 713	Surface soil	0 0-0 5	Metals	6200
CZ31-009	2087899 232	747623 713	Subsurface soil	0 5-2 5	Metals	6200
DA31-002	2087947 843	747676 230	Surface soil	0 0-0 5	Metals	6200
DA31-002	2087947 843	747676 230	Subsurface soil	0 5-2 5	Metals	6200
DA31-003	2087991 679	747622 845	Surface soil	0 0-0 5	Metals	6200
DA31-003	2087991 679	747622 845	Subsurface soil	0 5-2 5	Metals	6200
DA31-004	2088026 836	747581 612	Surface soil	0 0-0 5	Metals	6200

Location	Easting	Northing	Media	Depth Interval (feet.)	Analyte	On-Site Field Method
DA31-004	2088026 836	747581 612	Subsurface soil	0 5-2 5	Metals	6200
Twelve sampling intervals in this area will be re-sampled, and samples will be analyzed off-site using Method 6010 (refer to page 8) Four samples will be collected from the intervals with the highest concentrations, four samples will be collected from the intervals with concentrations closest to the AL, and four samples will be collected from the intervals with the lowest concentrations (measured using Method 6200)						
Locations Around the Northern Targets						
CV35-000	2087111 937	748560 260	Surface soil	0 0-0 5	Metals	6200
CV35-000	2087111 937	748560 260	Subsurface soil	0 5-2 5	Metals	6200
CV35-001	2087113 890	748555 247	Surface soil	0 0-0 5	Metals	6200
CV35-001	2087113 890	748555 247	Subsurface soil	0 5-2 5	Metals	6200
CV35-002	2087116 039	748550 495	Surface soil	0 0-0 5	Metals	6200
CV35-002	2087116 039	748550 495	Subsurface soil	0 5-2 5	Metals	6200
CV35-003	2087120 661	748558 307	Surface soil	0 0-0 5	Metals	6200
CV35-003	2087120 661	748558 307	Subsurface soil	0 5-2 5	Metals	6200
CV35-004	2087122 810	748553 164	Surface soil	0 0-0 5	Metals	6200
CV35-004	2087122 810	748553 164	Subsurface soil	0 5-2 5	Metals	6200
CV35-005	2087126 911	748560 976	Surface soil	0 0-0 5	Metals	6200
CV35-005	2087126 911	748560 976	Subsurface soil	0 5-2 5	Metals	6200
CV35-006	2087128 995	748555 898	Surface soil	0 0-0 5	Metals	6200
CV35-006	2087128 995	748555 898	Subsurface soil	0 5-2 5	Metals	6200
CV36-007	2087107 445	748570 416	Surface soil	0 0-0 5	Metals	6200
CV36-007	2087107 445	748570 416	Subsurface soil	0 5-2 5	Metals	6200
CV36-008	2087109 594	748565 664	Surface soil	0 0-0 5	Metals	6200
CV36-008	2087109 594	748565 664	Subsurface soil	0 5-2 5	Metals	6200
CV36-009	2087114 086	748573 151	Surface soil	0 0-0 5	Metals	6200
CV36-009	2087114 086	748573 151	Subsurface soil	0 5-2 5	Metals	6200
CV36-010	2087116 234	748568 463	Surface soil	0 0-0 5	Metals	6200
CV36-010	2087116 234	748568 463	Subsurface soil	0 5-2 5	Metals	6200
CV36-011	2087118 513	748563 125	Surface soil	0 0-0 5	Metals	6200

Location	Easting	Northing	Media	Depth Interval (feet.)	Analyte	On-Site Field Method
CV36-011	2087118 513	748563 125	Subsurface soil	0 5-2 5	Metals	6200
CV36-012	2087120 401	748575 885	Surface soil	0 0-0 5	Metals	6200
CV36-012	2087120 401	748575 885	Subsurface soil	0 5-2 5	Metals	6200
CV36-013	2087122 354	748571 328	Surface soil	0 0-0 5	Metals	6200
CV36-013	2087122 354	748571 328	Subsurface soil	0 5-2 5	Metals	6200
CV36-014	2087124 763	748565 859	Surface soil	0 0-0 5	Metals	6200
CV36-014	2087124 763	748565 859	Subsurface soil	0 5-2 5	Metals	6200
Three sampling locations in this area will be re-sampled, and samples will be analyzed off-site using Method 6010 (refer to page 8) One sample will be collected from the interval with the highest concentration, one sample will be collected from the interval with concentration closest to the AL, and one sample will be collected from the interval with the lowest concentration (measured using Method 6200)						
Background Locations						
CP29-000	2085854 623	747300 815	Surface soil	0 0-0 5	Metals	6200
CP29-000	2085854 623	747300 815	Subsurface soil	0 5-2 5	Metals	6200
CQ29-000	2086032 575	747318 176	Surface soil	0 0-0 5	Metals	6200
CQ29-000	2086032 575	747318 176	Subsurface soil	0 5-2 5	Metals	6200
CY28-000	2087690 561	747010 017	Surface soil	0 0-0 5	Metals	6200
CY28-000	2087690 561	747010 017	Subsurface soil	0 5-2 5	Metals	6200
CZ28-000	2087833 790	746962 274	Surface soil	0 0-0 5	Metals	6200
CZ28-000	2087833 790	746962 274	Subsurface soil	0 5-2 5	Metals	6200
The background sampling interval with the XRF metal concentration closest to the AL will be re-sampled (refer to page 8), and the sample will be analyzed off-site using Method 6010						

4.0 REFERENCES

DOE, 1992-2003, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado

DOE, 2002, Final Buffer Zone Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June

DOE, CDPHE, and EPA, 2003, Modifications to the Rocky Flats Cleanup Agreement Attachment 5, Rocky Flats Environmental Technology Site, Golden, Colorado, June

20/20

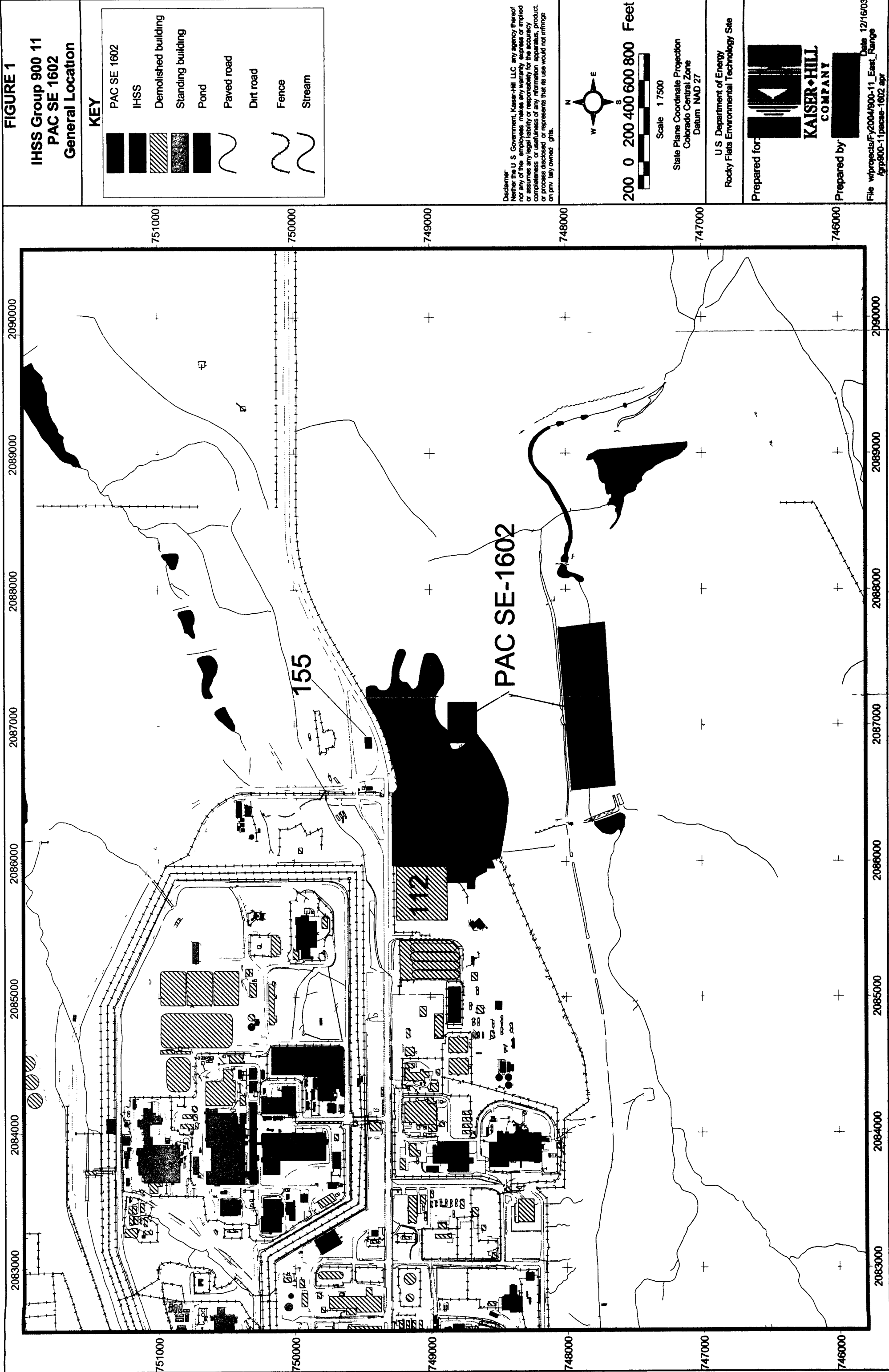


FIGURE 2
IHSS Group 900 11
PAC SE 1602
Existing Sampling Data

KEY

•

Surface soil sample greater than background means and wildlife than ecological receptor action levels

•

Surface soil sample greater than background means and ecological receptor action levels less than wildlife refuge worker action levels

•

Surface soil sample greater than background means plus two standard deviations less than action levels

■

Borehole soil sample greater than background means plus two standard deviations less than action levels

PAC SE 1602

Pond

Preble s Meadow Jumping Mouse habitat

5-ft Contour interval

Paved road

Dirt road

Fence

Stream

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W

E

S


100 0 100 200 300 400 Feet

Scale = 1 3500

State Plane Coordinate Projection
Colorado Central Zone
Datum NAD 27

U S Department of Energy
Rocky Flats Environmental Technology Site

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Date: 12/16/03
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900-11\page-1602.sht

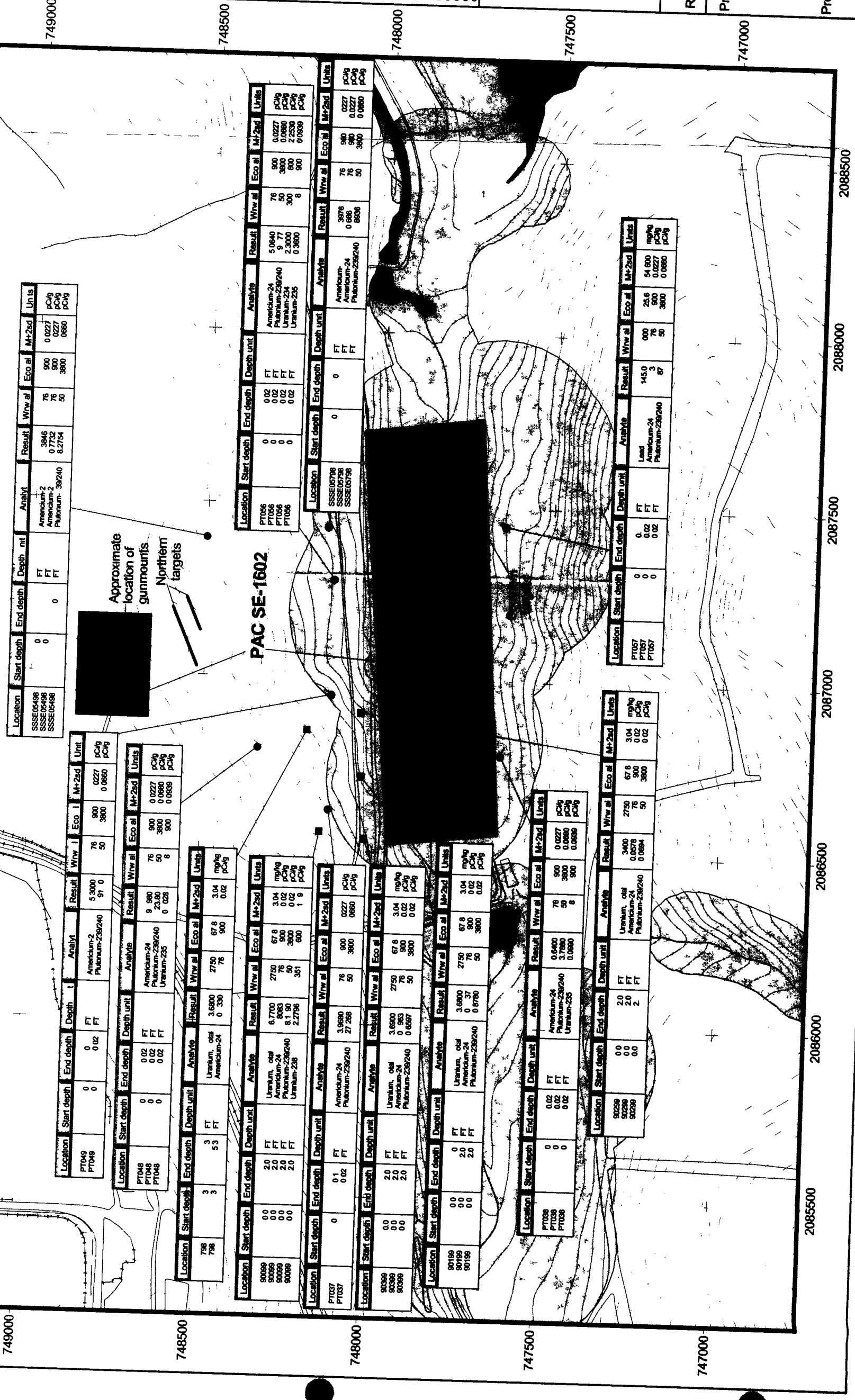


FIGURE 5

IHSS Group 900 11

PAC SE 1602

Proposed Sampling Locations
Near Northern Targets

KEY

- Trajectones for northern targets
- Trajectones for northern and southern targets
- Proposed sampling locations
- 5-ft Contour interval
- Paved road
- Dirt road

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Scale = 1 150

State Plane Coordinate Projection
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gp900-11\pacse-1602.apr

Pistol Range

(lies approximately 50 yards to northwest from northernmost row of targets)

Row of targets

Row of targets

CV36-009

CV36-007

CV36-013

CV36-010

CV36-008

CV36-011

CV36-014

CV35-000

CV35-005

CV35-003

CV35-001

CV35-006

CV35-004

CV35-002

FIGURE 6

IHSS Group 900 11
PAC SE 1602
Proposed Background
Sampling Locations

KEY

- Trajectories for northern targets
- Trajectories for northern and southern targets
- Proposed sampling locations
- Proposed background sampling locations

PAC SE 1602

Pond

Preble's Meadow Jumping
Mouse habitat

5 ft Contour interval

Paved road

Dirt road

Fence

Stream



100 0 100 200 300 400 500 Feet

Scale 1:3500

State Plane Coordinate Projection
Colorado Central Zone
Datum NAD 27

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FIGURE 4
IHSS Group 900 11
PAC SE 1602
Proposed Sampling Locations
Near Southern Targets

KEY

Trajectories for northern targets
Trajectories for both northern
and southern targets
Proposed Sampling

PAC SE 1602

Pond

Preble's Meadow Jumping
Mouse habitat

5 ft Contour interval

Paved road

Dirt road

Fence

Stream



State Plane Coordinate Projection
Colorado Central Zone
Datum NAD 27

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